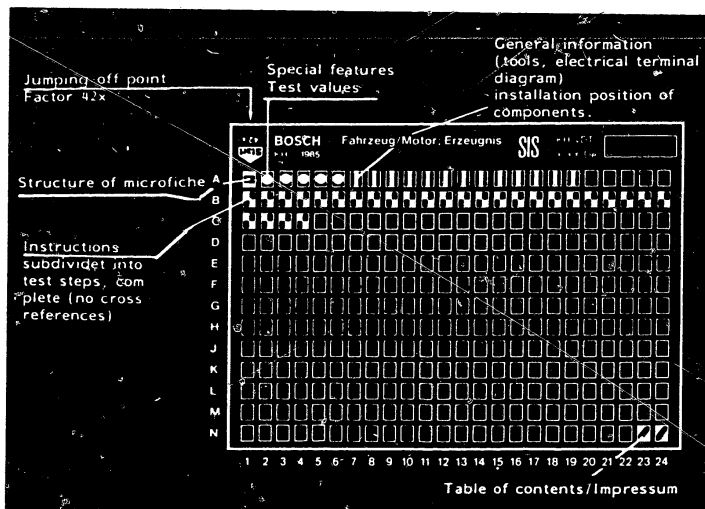
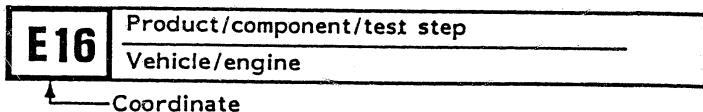


Structure of microfiche



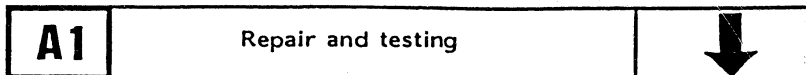
1. Read from left to right
2. Title of microfiche (appears on each coordinate)



3. Limits of section



4. References to relevant test steps in test specifications; coordinate e.g. C6



1. Special features:

- Slipringless generator
- Cannot be tested on conventional test benches since rotor is mounted on external drive.
- Generator is installed in railroad vehicles.

Generator 0 122 700 002 was used in preparing these instructions.

For test instructions see VDT-WFE 315/101, Ed. 1.

This microcard supersedes instructions VDT-WJE 315/5 of 6.1970.



2. Test specifications

2.1 Resistance under
exciter diode carrier 140 ... 170 Ω

B5

2.2 Instrument transformer
resistance 135 ... 165 Ω

B6

2.3 Pole body resistance
(excitation winding) 3.4 ... 4.1 Ω

B8

2.4 Stator winding resistance

Measuring points between
the phases 0.0088 + 0.0009 Ω

B11

A3

Test specifications

Generator 0 122 700 .. (U3)



3. Test specifications - mechanical:

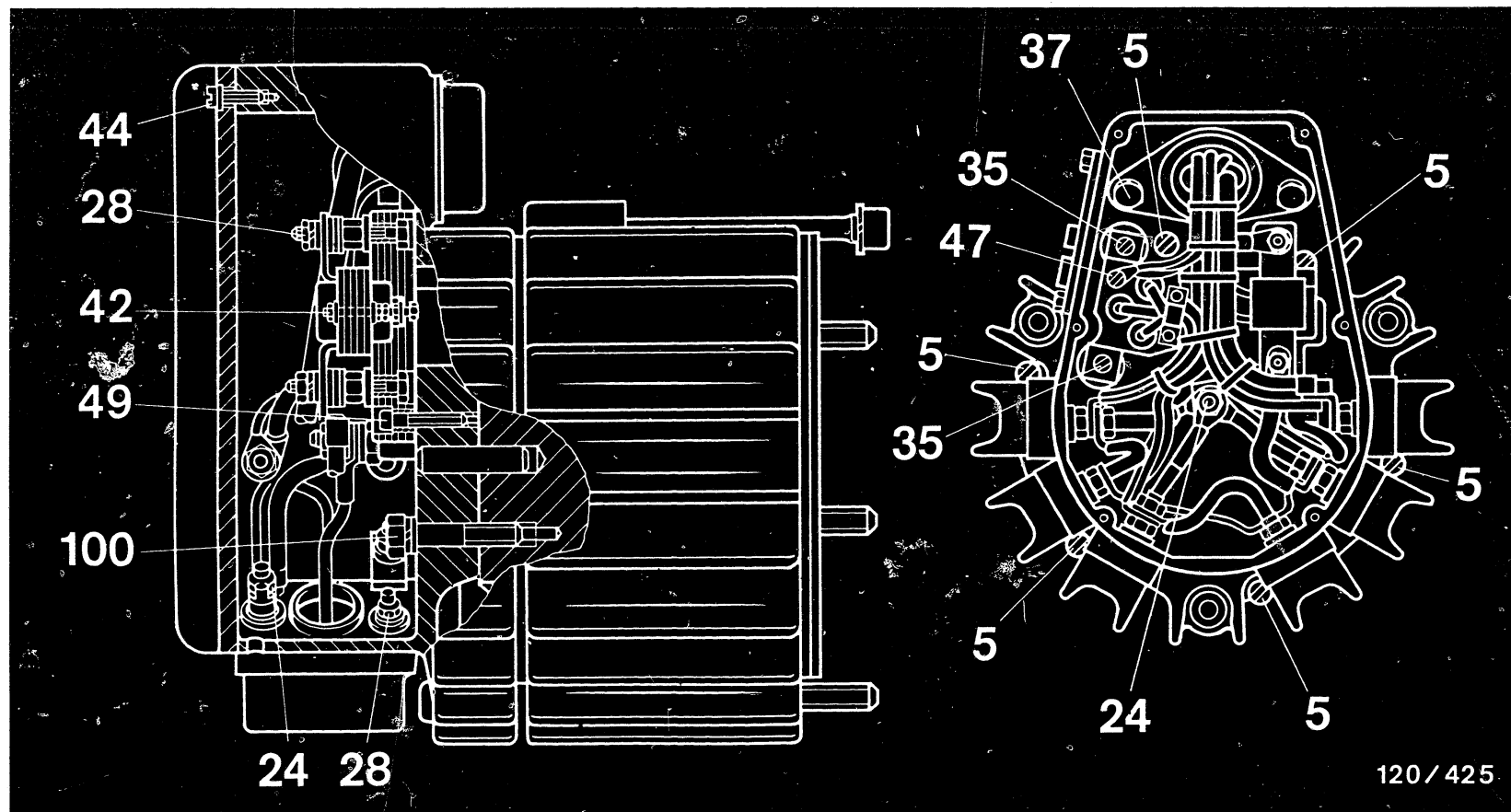
Air gap between stator and rotor 1.55 - 1.65 mm

Air gap between inner pole and rotor 1.50 - 1.60 mm

True-running error on O.D. of rotor 0.05 mm

Bind electric leads tight with hemp sail twine or self-locking cable holder straps (safeguard against sagging down and rubbing).





3.1 Tightening torques:

Item 5/49	7.2 ... 9.7 Nm
Item 24 M8	10 ... 13 Nm
Item 28	4.1 ... 5.5 Nm
Item 35/44	2.1 ... 2.8 Nm

Item 37	10 ... 13 Nm
Item 42	0.45 ... 0.6 Nm
Item 47	2.1 ... 2.8 Nm
Item 100	49 ... 65 Nm

A5

Test specifications

Generator 0 122 700 .. (U3)

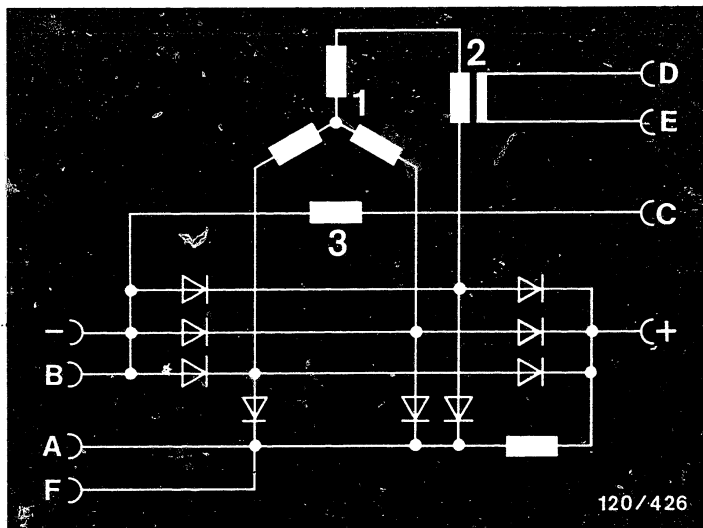


A6

Test specifications

Generator 0 122 700 .. (U3)

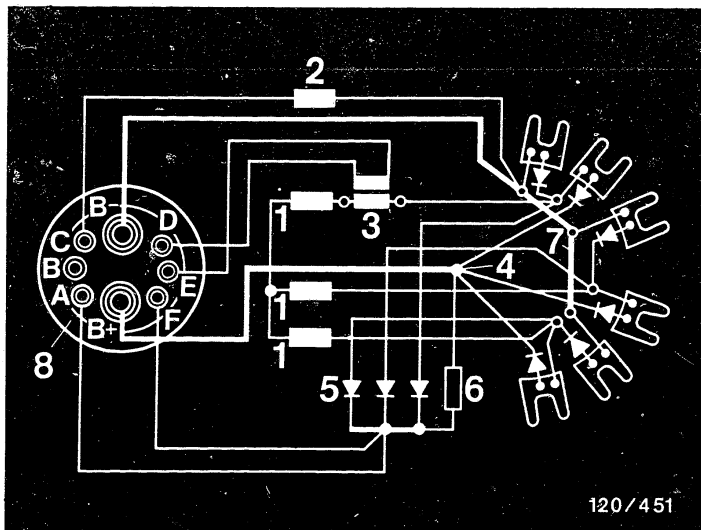




- 1 = Stator winding
 2 = Instrument transformer
 3 = Pole body (excitation winding)

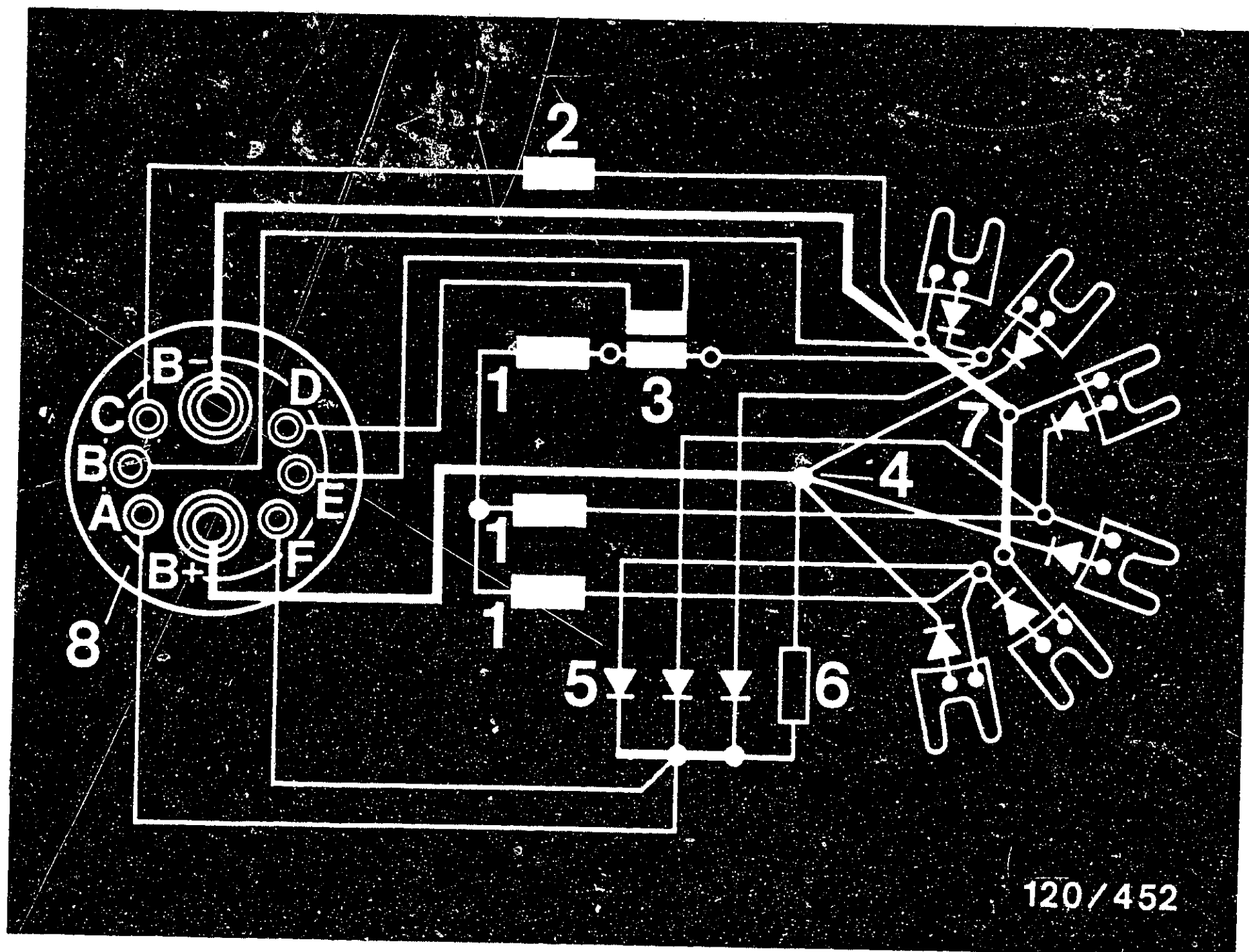
4. Circuit diagram

Generators U3 (RL) 28 V 130A16
 U3 (RL) 28 V 150A15



- | | |
|------------------------------------|-------------------------------|
| 1 = Stator winding | 5 = Exciter diodes |
| 2 = Pole body (excitation winding) | 6 = Resistor |
| 3 = Instrument transformer | 7 = Bus bar (D-) |
| 4 = Terminal stud (positive) | 8 = 8-pin socket to regulator |

4.1 Wiring diagram for generator 0 122 700 001



120/452

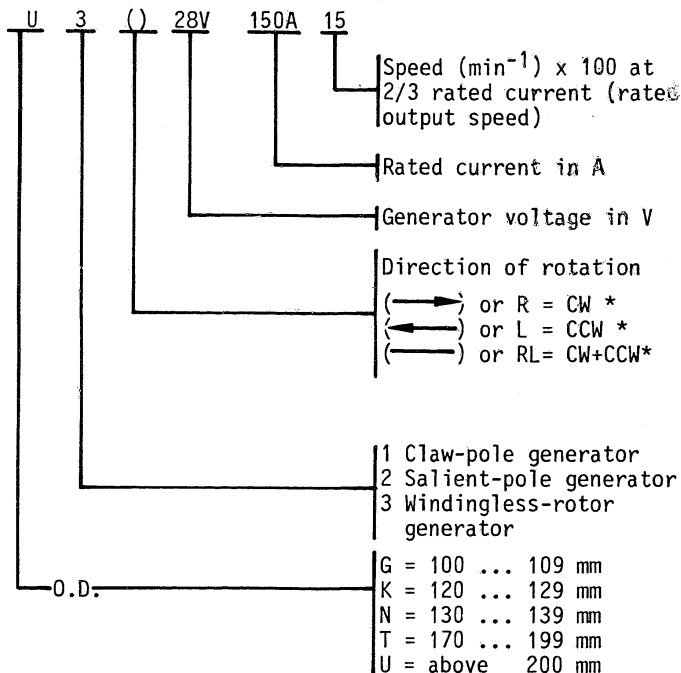
- | | |
|------------------------------------|-------------------------------|
| 1 = Stator winding | 5 = Exciter diodes |
| 2 = Pole body (excitation winding) | 6 = Resistor |
| 3 = Instrument transformer | 7 = Bus bar (D-) |
| 4 = Terminal stud (positive) | 8 = 8-pin socket to regulator |

4.2 Wiring diagram for generators 0 122 700 002 and .. 003



5. General information

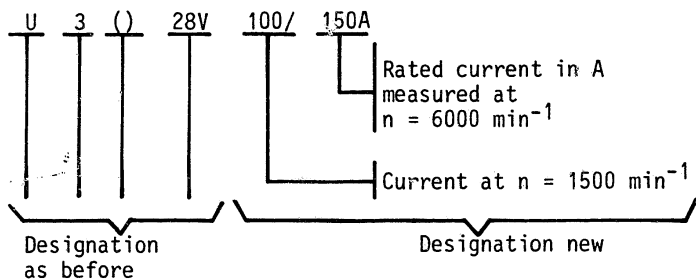
Explanation of type code on generator (old)



* CW = Clockwise
 CCW = Counterclockwise



Explanation of type code on generator (new)
as of beginning of 1983



Cleaning the parts

Observe the following safety regulations:

Decree on Working with Combustible Liquids (Vbf) issued by the Federal Ministry of Labor (BmA).

Safety Rules for Handling Chlorinated Hydrocarbons
for the workshop ZH1/222
for the employee ZH1/119

issued by the Central Association of German Employers' Liability Insurance Associations (Central Association for Accident Prevention and Industrial Medicine)
Langwartweg 103, 5300 Bonn 5.

Note:

Generator 0 122 700 002 was used in preparing these repair instructions.

The various versions of generator should be taken from the corresponding service-parts microcards.



6. Test equipment, tools, adhesives, lubricants

6.1 Test equipment

Test panel	EFAW 81	0 681 169 013
or	KDAW 9984	
Transformer panel	EFAW 82	0 681 169 014
or	KDAW 9985	
Insulation tester or test prods	EFAW 84	(included with EFAW 81 or KDAW 9984)
	KDAW 9983	
Alternator tester	EFAW 192	0 681 101 403
or	WPG 012.00	0 684 201 200
Electrics tester	ETE 014.00	0 684 101 400

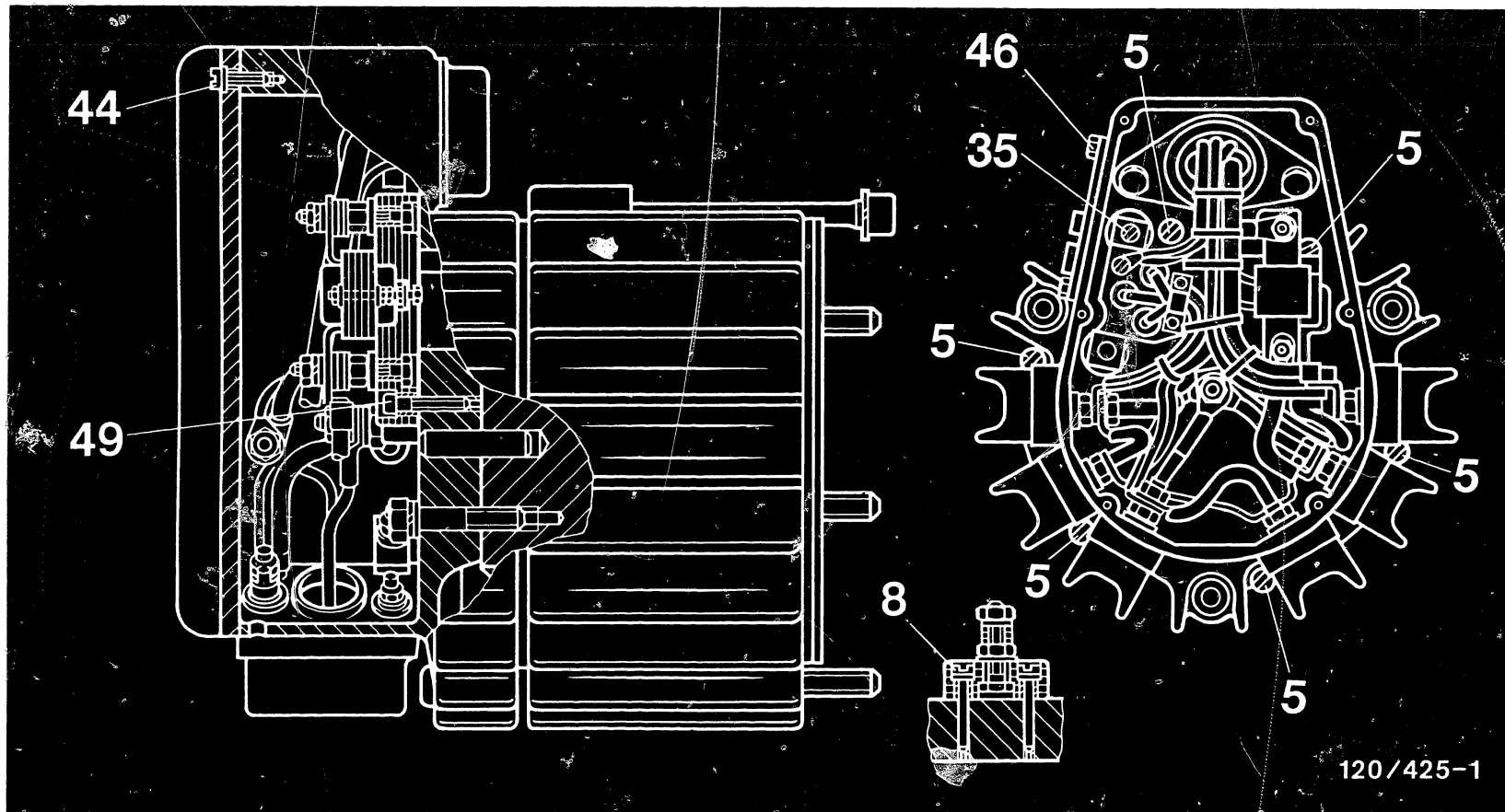
6.2 Tools

Torque wrench	commercially available
---------------	------------------------

6.3 Adhesives, fasteners

Adhesive KK57 v 9	5 703 156 103
Hemp cord or self-locking cable retaining straps	commercially available





6.4 Lubricants and lubrication tips

Grease threaded holes for screws of items 5,8,35,44,46,49 with Ft 70v1.
Pack countersinks of items 8 and 49 as far as screw head height with
sealing putty

5 700 040 000

5 703 241 000

A14

Test eqpt., tools, lubricants

Generator 0 122 700 .. (U3)

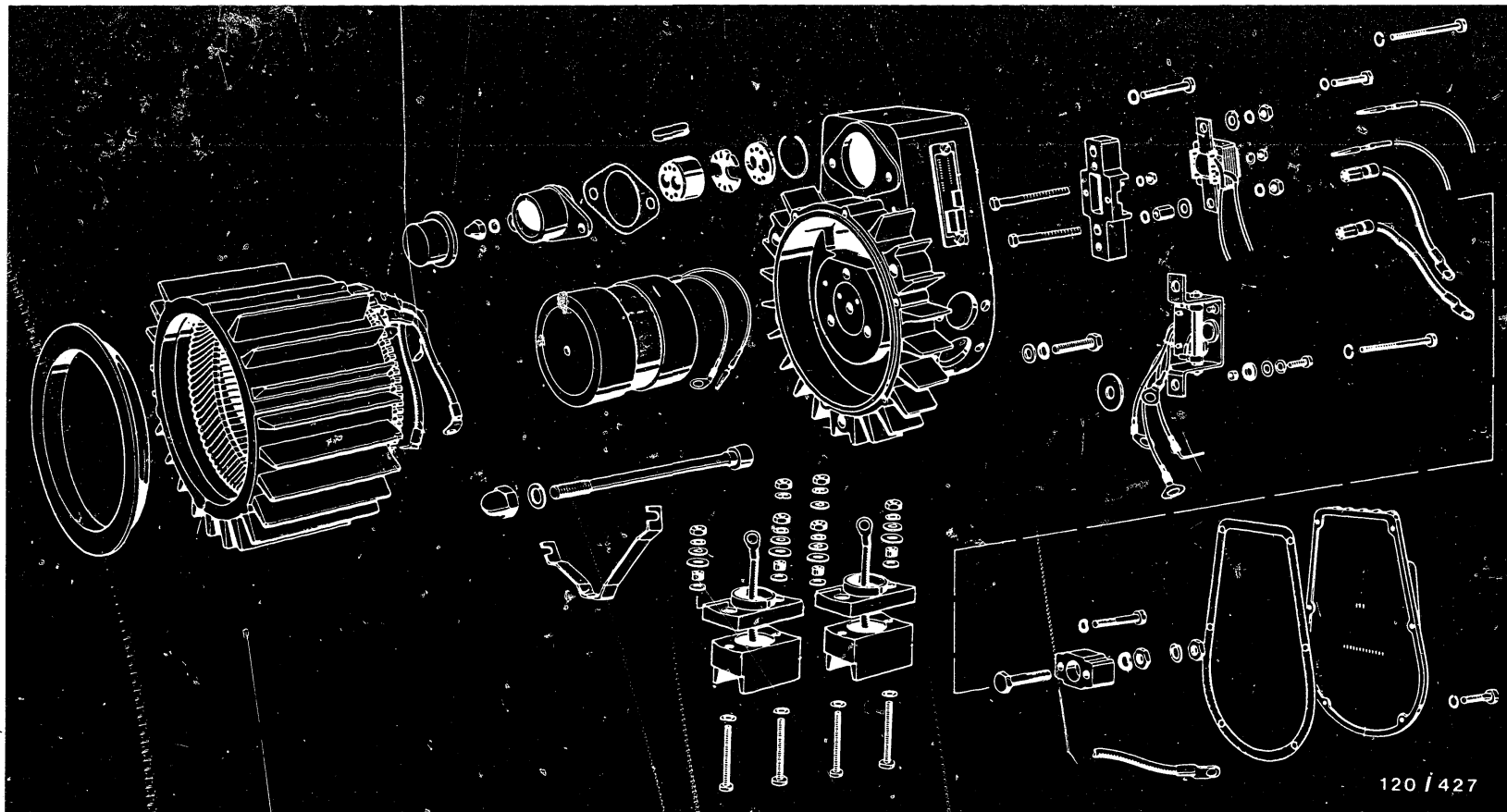


A15

Test eqpt., tools, lubricants

Generator 0 122 700 .. (U3)





7. Exploded view of generator U3 (RL) 28V150A15 (0 122 700 001,002)

A16

Exploded views

Generator 0 122 700 .. (U3)

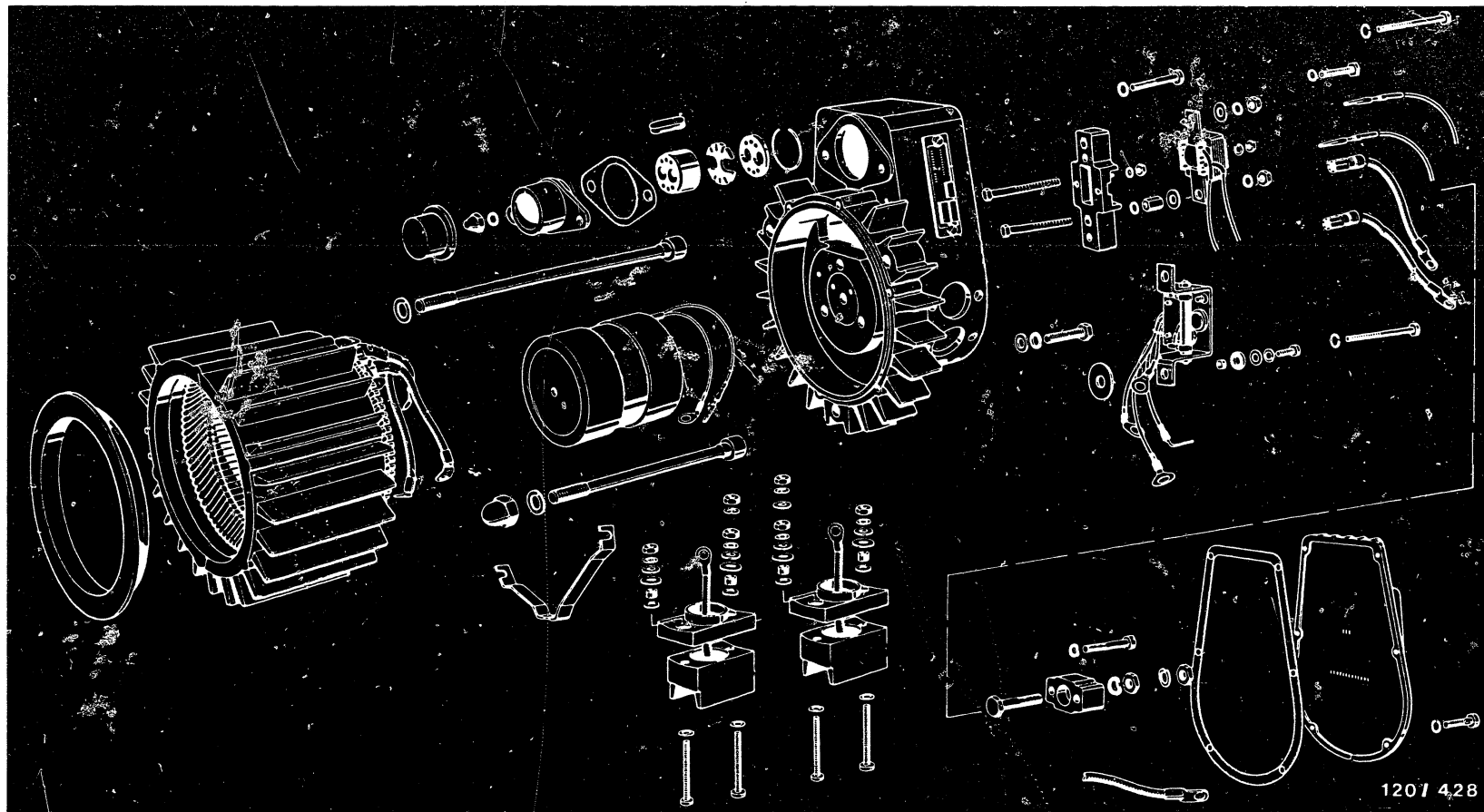


A17

Exploded views

Generator 0 122 700 .. (U3)





7.1 Exploded view of generator U3 (RL) 28V130A16 (0 122 700 003)

A18

Exploded view

Generator 0 122 700 .. (U3)

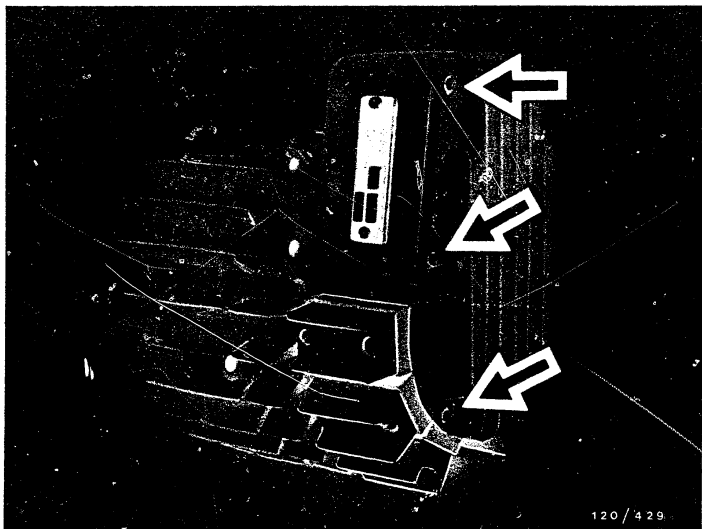


A19

Exploded view

Generator 0 122 700 .. (U3)





8. Dismantling the generator and testing the parts

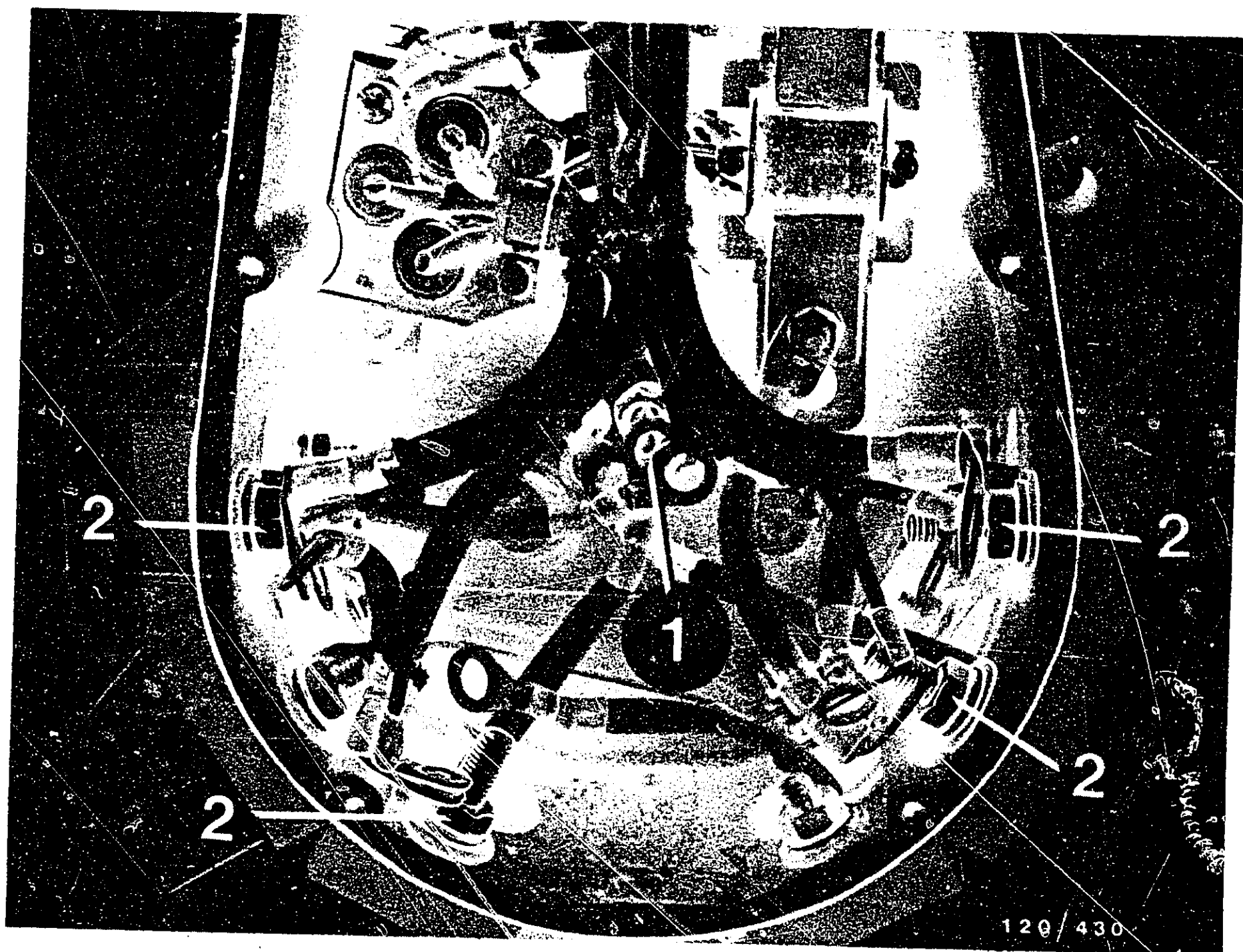
Loosen closing cover fastening screws (see picture, arrows).

Carefully remove closing cover.

B1

Dismantling generator, testing parts
Generator 0 122 700 ..(U3)





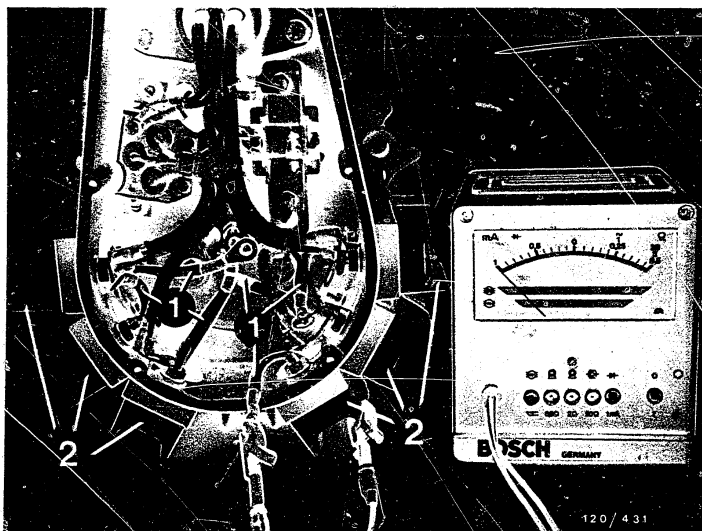
1 = Terminal stud, positive 2 = Terminal stud, phase

Loosen all connections at positive and phase terminal studs (see picture).

B2

Dismantling generator, testing parts
Generator 0 122 700 ..(U3)





- 1 = Power diodes connecting lead
2 = Heat sink with power diode

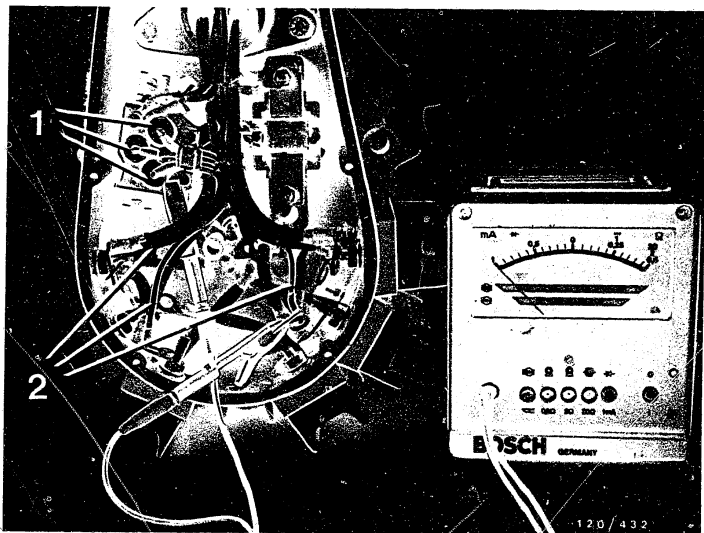
8.1 Testing the power diodes in the heat sink

Test power diodes in forward and reverse directions with alternator tester WPG 012.00. Note switch position on tester.

Measuring points: Heat sink and diode connecting lead (see picture).

Diode is O.K. if the pointer of the tester is in the green zone when measuring.





1 = Exciter diodes

2 = Connecting leads

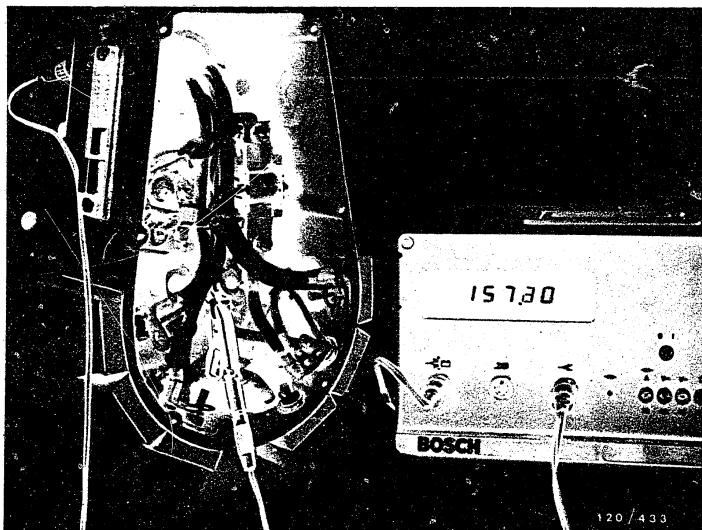
8.2 Testing the exciter diodes

Test exciter diodes in forward and reverse directions with alternator tester WPG 012.00. Note switch position on tester.

Measuring points: Exciter-diode carrier and exciter diodes connecting lead (see picture)

Exciter diodes are O.K. if the pointer of the tester is in the green zone when measuring.





8.3 Testing the resistor under the exciter-diode carrier

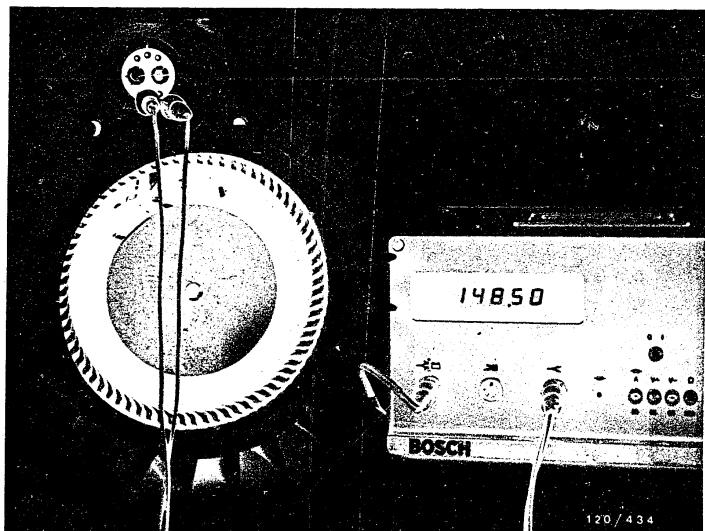
Test resistor with electric tester ETE 014.00.

Measuring points: Free lead of resistor and socket A or F on plug connector.

Resistance should be: 140 ... 170 Ω

If resistor defective, replace complete exciter-diode bracket.

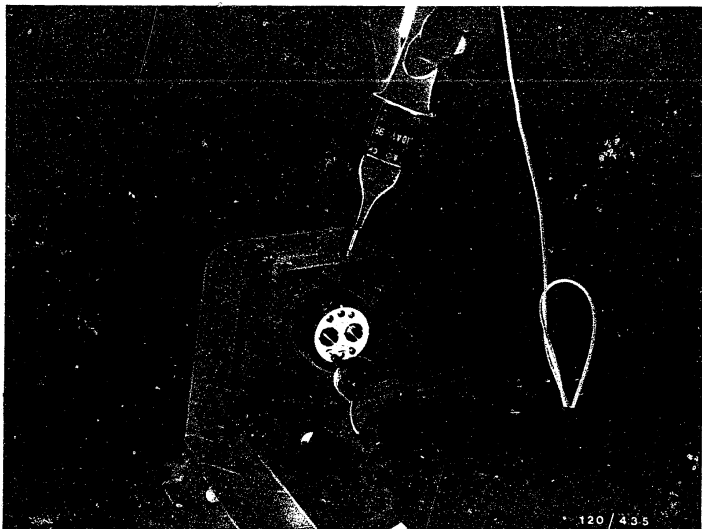




8.4 Testing the instrument transformer (resistance)

Connect test prods of electric tester ETE 014.00 at sockets D and E of the 8-pin connection socket.

Resistance should be: 135 ... 165 Ω



Testing the instrument transformer (short circuit to ground)

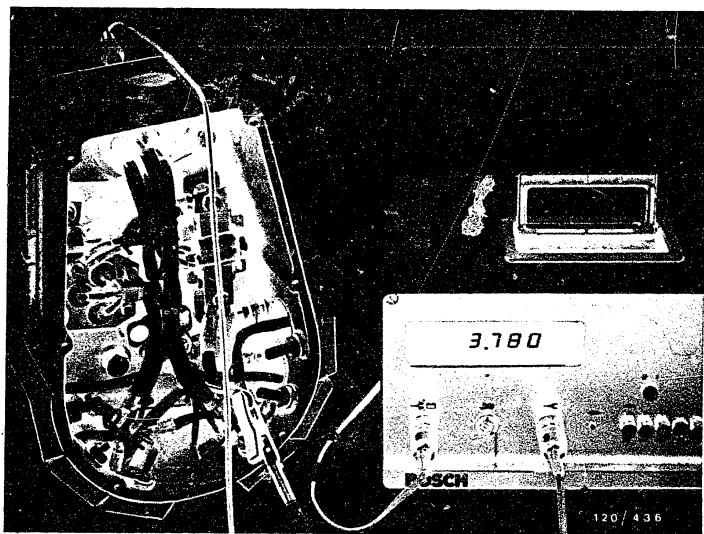
While installed, test instrument transformer for short circuit to ground with test prods EFAW 84 or KDAW 9983 at sockets D or E of 8-pin connection socket to generator housing.

Test voltage: 80 V a.c.

B7

Dismantling generator, testing parts
Generator 0 122 700 ..(U3)





8.5 Testing the pole body (excitation winding)

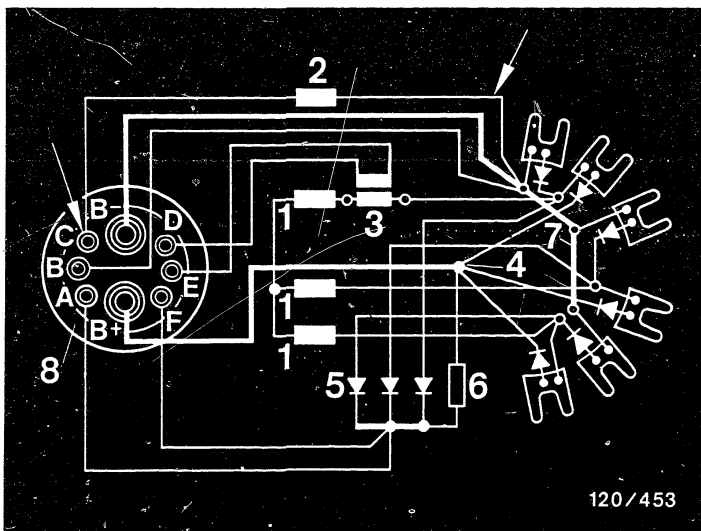
While installed, test the resistance of the pole body with winding (excitation winding) using electric tester ETE 014.00.

B8

Dismantling generator, testing parts

Generator 0 122 700 ..(U3)





120/453

- | | |
|------------------------------------|-------------------------------|
| 1 = Stator winding | 5 = Exciter diodes |
| 2 = Pole body (excitation winding) | 6 = Resistor |
| 3 = Instrument transformer | 7 = Bus bar (D-) |
| 4 = Terminal stud (positive) | 8 = 8-pin socket to regulator |

Measuring points: Socket C and free connection of excitation winding (see picture, arrows)

Resistance should be: 3.4 ... 4.1 Ω

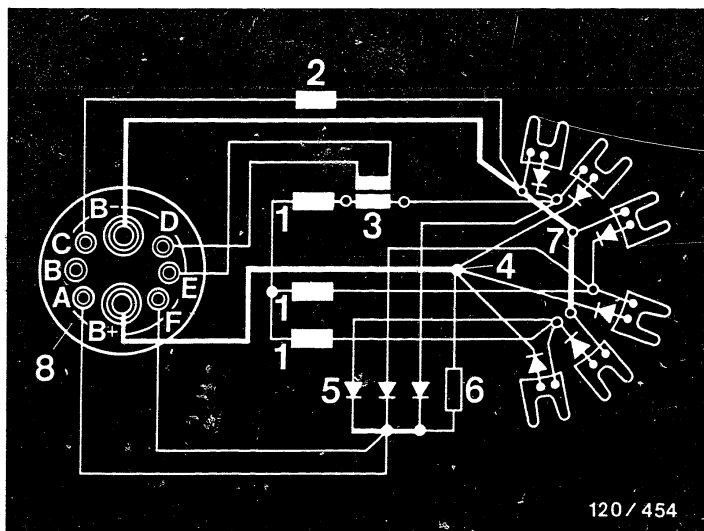


Testing the pole body (excitation winding) for short circuit to ground

While installed, test the excitation winding for short circuit to ground using test prods EFAW 84 or KDAW 9983.

Measuring points: Terminal C at 8-pin socket and generator housing (see picture).

Test voltage: 80 V a.c.



120 / 454

8.6 Testing the stator winding (resistance)

Note:

The test is to be evaluated as a continuity test (yes/no) since the very small resistance of the stator winding cannot be measured precisely.

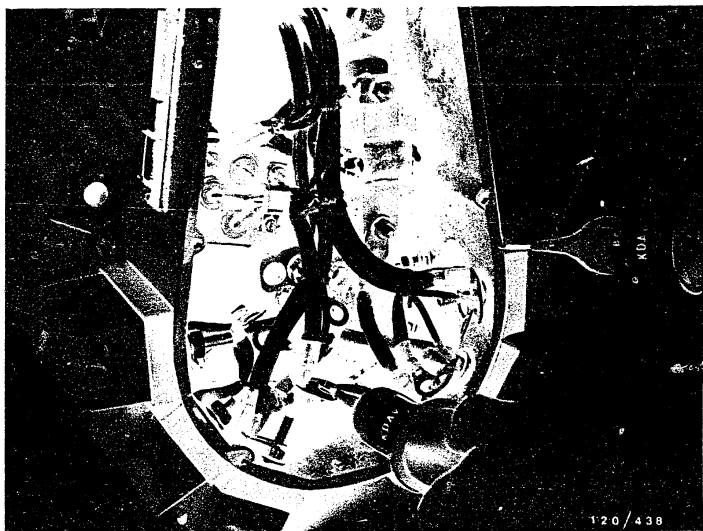
Measuring equipment: Electric tester ETE 014.00

Measuring points: Between the free phase connections

Resistance per phase: 0.0088 - 0.0097 Ω

Note:

Only 2 phases in each case can be measured together.



Testing the stator winding (short circuit to ground)

While installed, test the stator winding for circuit to ground using test prods EFAW 84 or KDAW 9988.

Measuring points: Free connection of stator winding and generator housing (see picture).

Test voltage: 80 V a.c.



9. Cleaning the parts

Benzine, tri- or perchloroethylene are approved for washing out automotive electric components. Handle both cleaning agents carefully in accordance with their degree of danger.

Benzine, acetone and ethanol are combustible liquids and, when mixed with air, represent an explosion hazard. Washing may be performed only in special bowls or containers with special lids, so that, if the liquid ignites, the lid closes automatically, smothering the fire. An extractor system must be provided for large washing containers (as of 500 x 500 mm).

Tri and per are liquids whose vapors have a narcotic effect and are hazardous to health if inhaled over long periods. Tri vapors are heavier than air and, therefore, there is increased danger at floor level. Wear protective goggles and gloves when washing.

Cleaning operations with tri at regular intervals or continuously may be performed only in special containers with the extractor system on. When washing components, avoid bending over the tri tank.

Observe the following safety regulations:

Decree on Working with Combustible Liquids (Vbf) issued by the Federal Ministry of Labor (BmA).

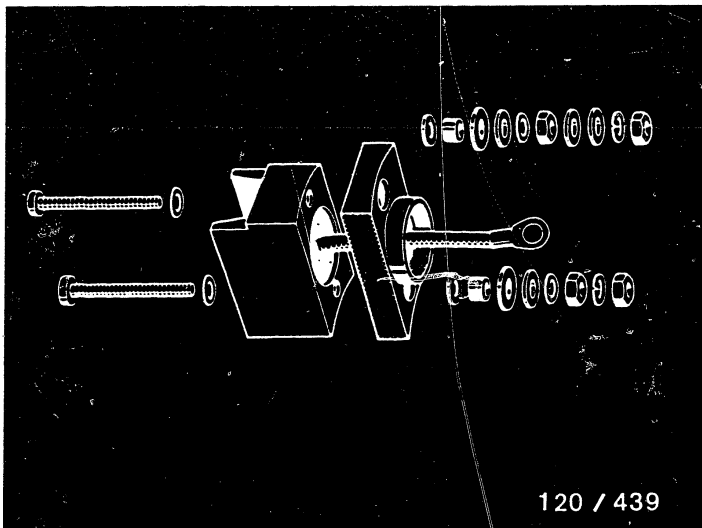
Safety Rules for Handling Chlorinated Hydrocarbons:

for the workshop	ZH 1/222
for the employee	ZH 1/119

issued by the Central Association of German Employers' Liability Insurance Associations (Central Association for Accident Prevention and Industrial Medicine)
Langwartweg 103, 5300 Bonn 5.

In countries outside the Federal Republic of Germany, observe the corresponding local regulations.





10. Replacing the heat sink with power diode (positive diode)

Loosen heat sink fastening nuts and remove.

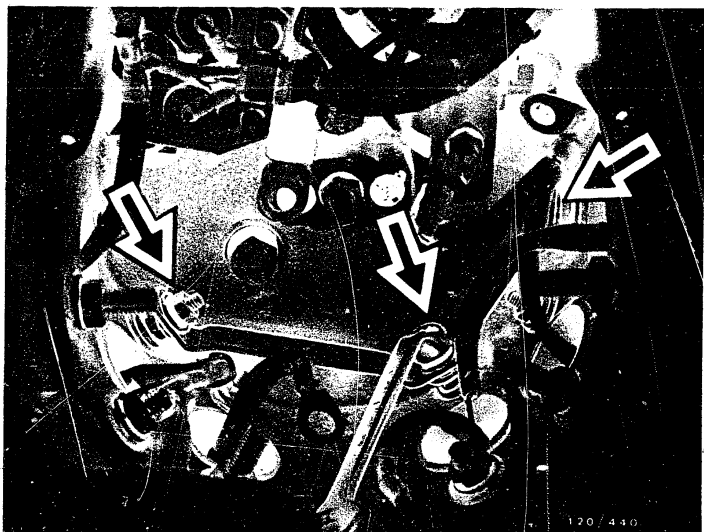
Remove rubber insulation part and install on new heat sink.

Install insulating washers and bushings on new heat sink.

Mount new heat sink in generator housing. Using electrics tester ETE 014.00, test insulation resistance of heat sink to generator housing.

Resistance should be: $\infty \Omega$





Replacing the heat sink with power diode (negative diode)

Remove bus bar (see picture, arrows).

Loosen heat sink fastening nuts and remove. Insert new heat sink with insulating material in generator housing and fasten (tightening torque 4.1...5.5 Nm). Using electric tester ETE 014.00, measure insulation resistance of heat sink to generator housing. Resistance should be: $\infty \Omega$.

Install bus bar. Make sure that there are plain washers on both sides of the bus bar. If necessary, use further shims so that the bus bar is not bent. Tightening torque for fastening nut: 4.1...5.5 Nm.



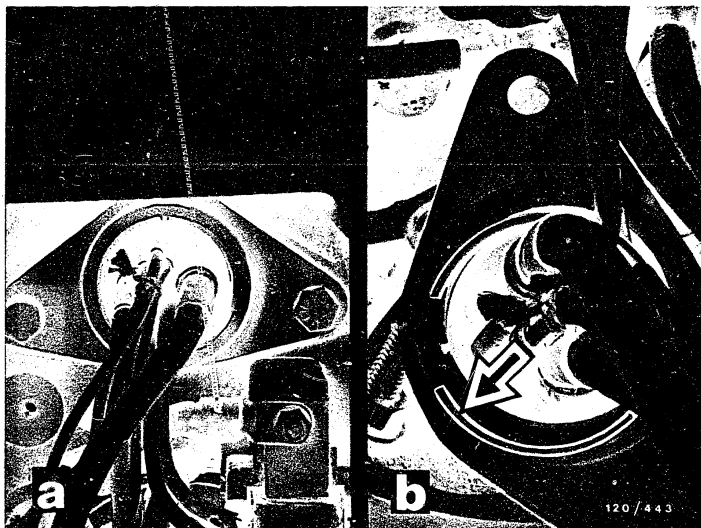


10.1 Replacing the exciter-diode carrier

If an exciter diode is defective, replace the entire exciter-diode bracket.

Tightening torque for fastening screws (see picture, arrows) 2.1 ... 2.8 Nm





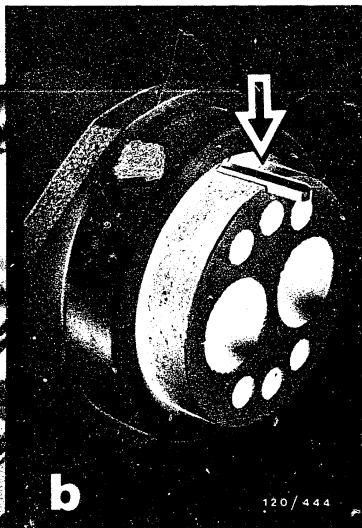
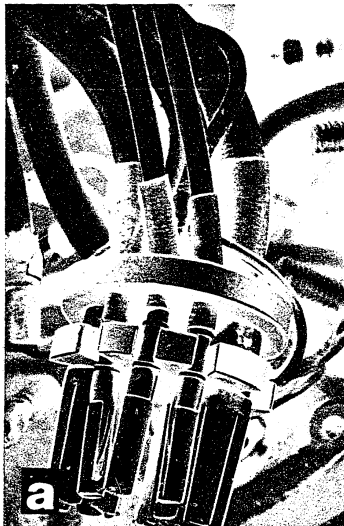
10.2 Unscrewing and dismantling the socket

Unscrew socket fastening screws.

Using suitable tool, remove retainer (see picture b, arrow) and dismantle socket.

Pull apart plug insert and plug base. To the extent necessary, remove plug receptacles.



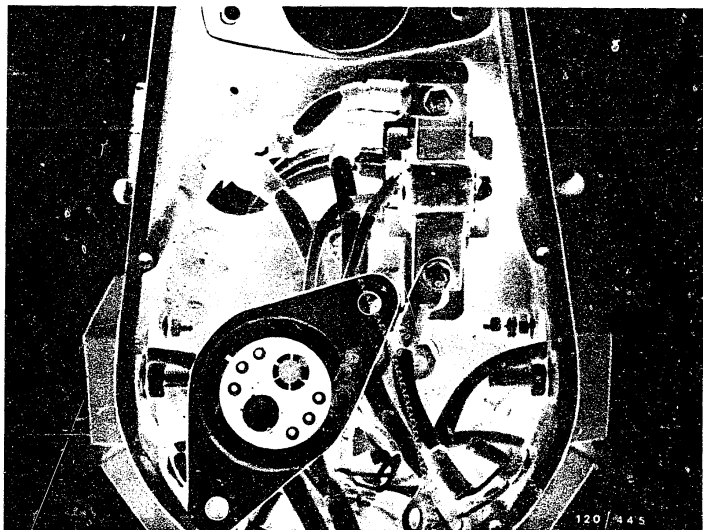


Installing the socket

Attach the receptacles (see picture a). Push together the plug inserts and plug base.

When assembling, make sure that the parallel key (see picture b, arrow) is introduced into the groove in the socket. Secure plug inserts and plug base in socket with retainer.





10.3 Replacing the instrument transformer

Using a socket wrench, loosen lateral connecting nuts and fastening nuts.

Dismantle socket and remove receptacles D and E.

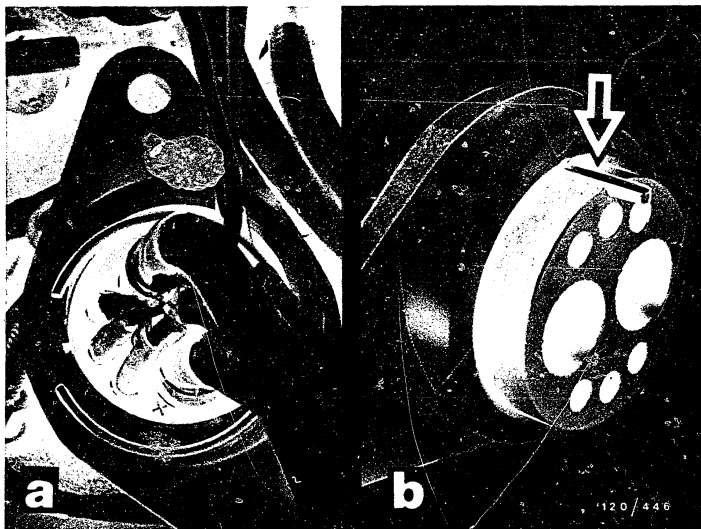
To the extent necessary, remove hemp cord.

Mount new instrument transformer on housing.

Fastening screws tightening torque: 4.1...5.5 Nm

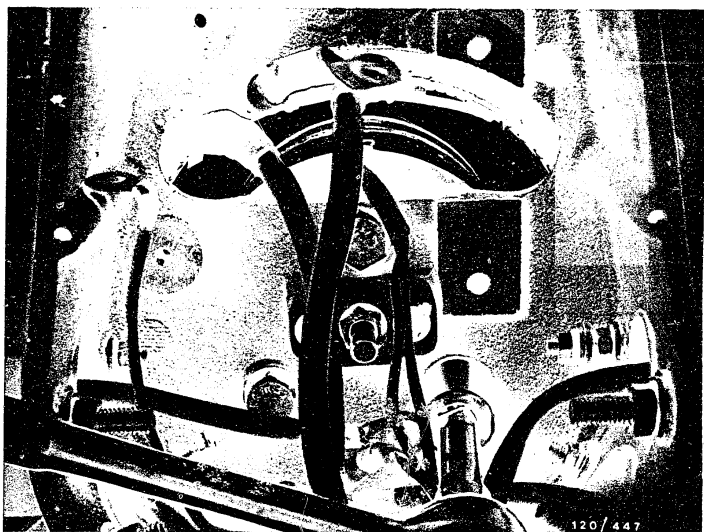
Connecting nuts tightening torque: 0.45...0.6 Nm





Insert receptacles in plug insert.
Introduce plug inserts together with plug base into socket. Slide parallel key into groove in socket (see picture b, arrow).

Re-affix hemp cord at the same point and secure with adhesive KK 57v9.



10.4 Replacing the pole body (with winding)

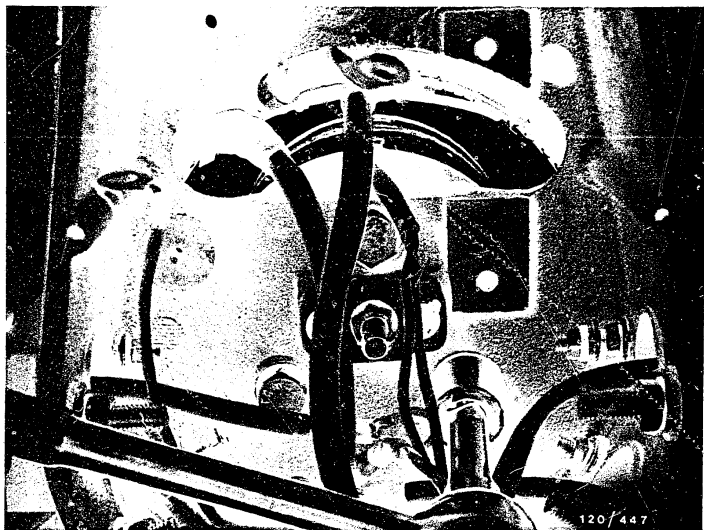
Remove socket and dismantle (remove receptacle C). To the extent necessary, remove hemp cord.

Loosen three pole body fastening screws (see picture). Carefully remove pole body from housing.

Note:

Before installing the pole body, spot-face the seating surfaces of the fastening screws with a 25 mm diameter milling cutter.





Carefully introduce new pole body into stator frame.
Screw down with new fastening screws (inscription 10 K).
Be sure to observe tightening torque 49 ... 65 Nm.

B22

Assembling the generator

Generator 0 122 700 ..(U3)



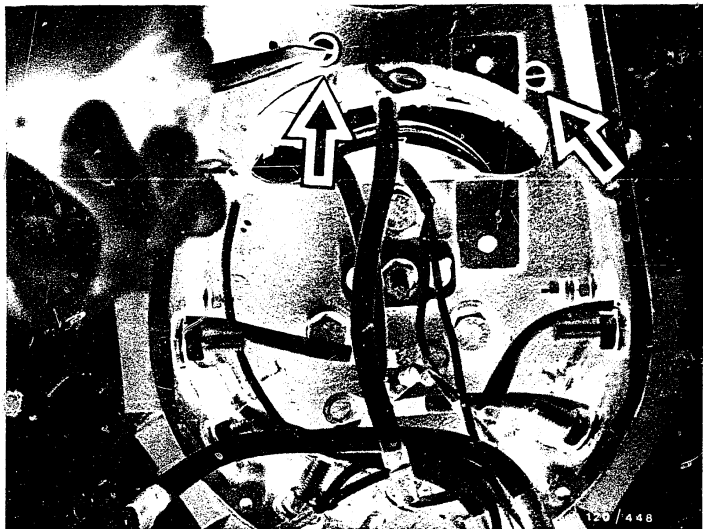


Insert receptacle C into plug inserts. Introduce plug inserts together with plug base into socket. Slide parallel key into groove in socket. Insert retainer.

Mount socket assembly on generator housing.

Tightening torque 10 ... 13 Nm.





10.5 Replacing the stator frame with stator winding

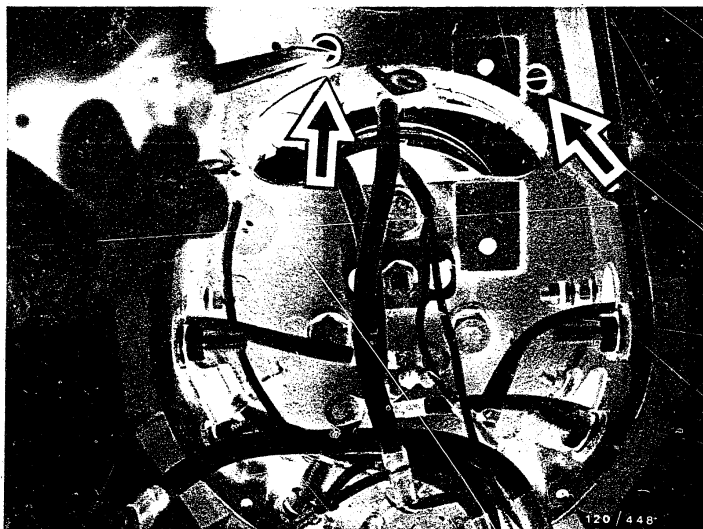
Remove hemp cord.

Remove all heat sinks.

Unscrew instrument transformer.

Loosen stator frame fastening screws (see picture) and remove stator frame.





Carefully introduce new stator frame into connection housing and screw down.

Tightening torque 10 ... 14 Nm

Note:

Do not damage the phase ends.

Re-install instrument transformer and heat sink.

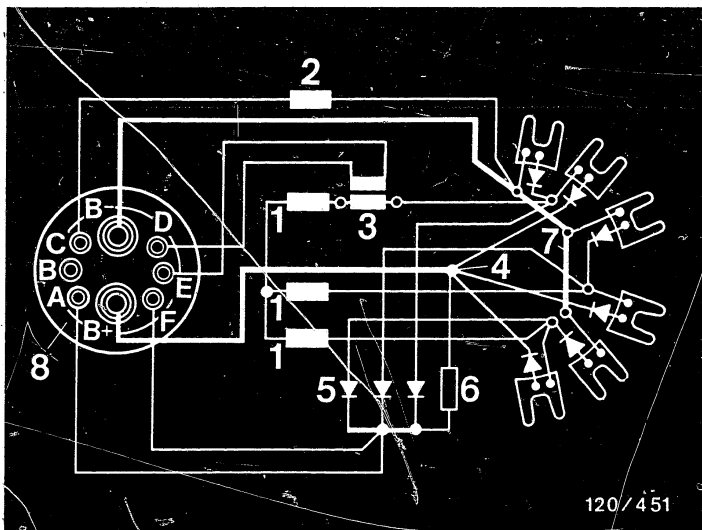
Tightening torque for instrument transformer fastening screws:

4.7 ... 5.5 Nm

Tightening torque for heat sink fastening screws:

4.1 ... 5.5 Nm



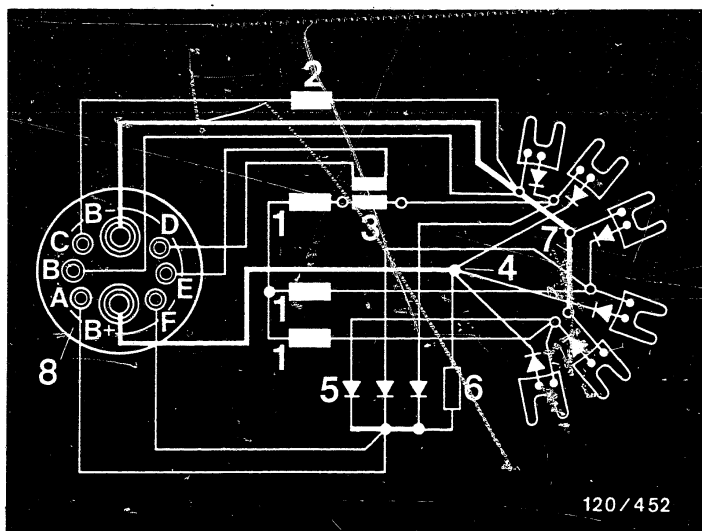


- | | |
|------------------------------------|-------------------------------|
| 1 = Stator winding | 5 = Exciter diodes |
| 2 = Pole body (excitation winding) | 6 = Resistor |
| 3 = Instrument transformer | 7 = Bus bar (D-) |
| 4 = Positive terminal stud | 8 = 8-pin socket to regulator |

10.6 Connecting the leads according to wiring diagram Wiring diagram for generator 0 122 700 001

After repairing the generator, connect all leads according to wiring diagram.





- | | |
|------------------------------------|-------------------------------|
| 1 = Stator winding | 5 = Exciter diodes |
| 2 = Pole body (excitation winding) | 6 = Resistor |
| 3 = Instrument transformer | 7 = Bus bar (D-) |
| 4 = Positive terminal stud | 8 = 8-pin socket to regulator |

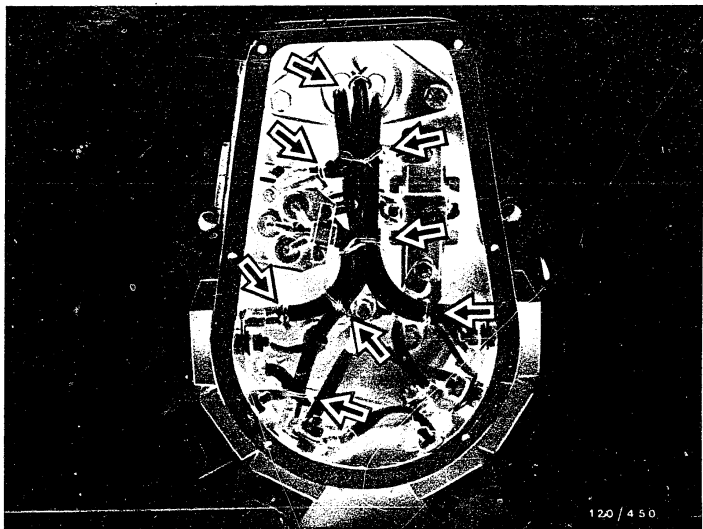
Wiring diagram for generators 0 122 700 002 and 003

After repairing the generator, connect all leads according to wiring diagram.

C3

Assembling the generator
Generator 0 122 700 ..(U3)





10.7 Securing the leads

After connecting all leads, re-affix missing hemp cord (see picture, arrows) and secure with adhesive KK 57v9.

It is also possible to use self-locking plastic bands. Mount closing cover. If necessary, use new gasket.



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4. Circuit diagram of generators.....	A 7
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10.2 Dismantling and assembling the 8-pin socket.....	B 17
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10.5 Replacing the stator frame with stator winding.....	B 24
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